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COMPARISONS OF EFFECTS OF STUDENT AND TEACHER PREPARED SCREENCASTS ON STUDENT ACHIEVEMENT

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Abstract

The goal of this study was comparisons of effects of student and teacher prepared screencasts about Photoshop graphics editor on student achievement, during the spring 2013 semester Computer course. To achieve this goal, pretest-posttest quasi-experimental design was used to compare two groups. Sample was composed 74 participants and they were divided into a control group and an experimental group. Students prepared all the screencasts in the experimental group and instructor prepared the screencasts in the control group. As a result of this study, it was concluded that achievement scores of the experimental group who prepared their own screencasts were higher than the control group whose screencasts were prepared by the instructor.

Keywords: Screencasting, Student, Instructor, Student Achievement

Introduction

Screencast is the name of the digital video recording of computer screen output. Another common name for it is video screen capture. While a single image is described as screenshot, video recording is described as screencast (Lang and Cecucci, 2013; Jordan, Loch, Lowe and others 2011). It can be defined as video recording from a screen that demonstrates the procedures. In this method instructor is recording all the screen activities to achieve a certain goal. Direct recording of the screen activities and the images is the major feature of the screencast. In addition to that, multimedia that supports learning can be added to screencasts. Pinder-Grover, Green and Millunchick (2011) described five steps of screencast preparation as content preparation, recording, editing, production, and printing.

Screencasting has been used successfully to teach certain contents as task-oriented activities. Screencasting are educational materials that can include PowerPoint presentations or drawings and they can be shared with

students in an open web site. (Paul, 2009; Brown-Sica, Sobel, Pan 2009). Instructors can conduct a part or whole of a course in this from using visual and audio screencasts; in addition they can assign homework for students to produce their own screencasts (McGarr, 2009). However, most common technique has been recording as if lecturing in a classroom and publishing it online.

Screencasting became an increasingly popular instructional method. It has been used widely in all levels of education, especially in higher education. Educational screencast has been used to teach mathematics (Mullamphy, Higgins, Belward and Ward, 2010), statistics (Lloyd & Robertson, 2012), and engineering (Galligan and Hobohm, 2013). Universities such as Stanford, Berkley, and Yale published their own modules in different disciplines (Winterbotton, 2007).

There are number of studies arguing that screencasts are beneficial for students (Rose, 2009; Pinder-Grover, Millunchick,Bierwert , 2008; Pinder-Grover, Millunchick, Bierwert and Shuller , 2009). Tekinarslan (2013) found that groups using screencast performed better than the live presentation in a classroom groups at the college level. Hove, Christina and Corcoran (2008) concluded that this method increased the performance of students who had attendance problems more than the other students. Grabe and Christopherson (2008) demonstrated that there was a positive relationship between screencast usage and exam scores.

Mullamphy, Higgins, Belward and Ward (2010) reported that majority of the students found screencasts beneficial. In addition, majority of the students suggested screencast should be used as a supplementary material; only half of the students thought screencasts could replace a face-to-face course. Lloyd and Robertson (2012) used screencasts as a supplementary material in a college statistics course. They found that student's problem solving ability and understating of the content increased significantly. When the literature related to screencasting reviewed no studies about the effects of student and teacher prepared screencasts on student's achievement scores found.

Methodology

The goal of this study was comparisons of effects of student and teacher prepared screencasts about Photoshop graphics editor on student achievement, during the Spring 2013 semester Computer course at GaziosmanPasa University. A pretest posttest quasi-experimental design with a control group was used in the study (Büyüköztürk, 2011). Participants of this study were 74 students from the Elementary Education program who took the course. Both control group and experimental group was composed of 37 students. 21 students were female and 16 students were male in the

control group and 20 were female and 17 male in the experimental group. Both groups did not partake any screencasting activities prior to this study.

The multiple-choice test to measure student's achievement was developed by the researcher. The achievement test was used both as a pretest and a posttest due to the design of the study. The researcher prepared a draft test with 46 items. Questions, generated using textbooks and software itself, were first used in a pilot study (n=48, College of Education, Social Science Education Program). 16 items with discrimination scores of .30 and lower were removed from the test. Remaining 30 questions were used in the final achievement test. 30 items of the achievement test had a .92 KR20 score, mean difficulty index of (mean P) .45 and mean discrimination power of (mean bi-serial) .61.

74 participants of the study were randomly placed in to an experimental and a control group. 37 students in the experimental group were placed in 6 separate production groups. Experimental group had a detailed lecture about how to produce screencasts at the beginning of the semester. 6 production groups in the experimental group brought the screen cast they have created to classroom each week. During the class whole class produced a single screencast by discussing with other groups whom prepared screencast about the same subject. These screencasts were shared by students in social media each week. In this was 6 weeks of the course were covered via these screencast prepared in the classroom by the students and shared in social media. There were 37 students in the control group. In this group, lectures were conducted by using instructor prepared screencasts that were available to students during the lectures and shared after the lecture in social media. After the determination of the control and experimental groups students took the pretest and after the treatment students took the posttest. T test was used to determine the difference between the scores of two groups.

Findings

Comparison of the pretest mean scores of two groups

There was not a significant difference between the pretest mean scores of the control group (M=24,08, SD=4,75) and experimental group (M=25.97, SD=5,33) at the P <= .05 (t=-,14, df=72, p=.88). As a result both groups pretest scores could be considered equal.

Comparison of the posttest mean scores of two groups

There was a significant difference between the pretest mean scores of the experimental group (M=78,48, SD=4,62 and control group (M=67,51 SD=7,01) at the P <= .05 (t=-7,94 df=72, p=,00). As a result screencast preparing experimental group's posttest scores were significantly higher than the control group's scores.

Comparison of both groups based on total achievement

Based on the findings, total achievement scores of experimental group were significantly higher than the control group ($t = -7.20$, $df = 72$, $p = .00$). This indicates that experimental group students with self-prepared screencasts were more successful than the control group students with instructor prepared screencasts.

Discussion and Conclusion

The aim of this study was comparisons of effects of student and teacher prepared screencasts about Photoshop graphics editor on student achievement. Findings suggested that students with self-prepared screencasts were more successful than the students with instructor prepared screencasts. Although achievement scores of both groups increased, scores of the group using self-prepared screencasts were higher. The major reason for this can be attributed to content knowledge difference that the students experienced while preparing the screencasts themselves also mentioned by Lloyd and Robertson (2012). Content knowledge difference can be described as being exposed to both cognitive and affective influences compared to other group (Clark and Mayer, 2008), learning by doing, in another word by gaining more content experience.

Producing a screencast of the software means running the software personally, applying the knowledge and facing the issues head on which are the most sought after learning situations in terms of educational theory. On the other hand, the other group students whom were trained with instructor prepared screencasts had to have the initiative to study themselves with the software and can complete the course passively without much practice if they did not want to; as a result they would end up with much less content knowledge compared to screencast producing group. Due to this situation their achievement levels could be lower.

Other factor that can create the difference between groups could be motivation, and interaction among the students both in and out of the class. Probably the most significant disadvantage of screencasting method, as also mentioned by Winterbottom (2007), is limited personal interaction. Since students in the screencasting preparation group had the responsibility on their shoulders, they might have been more motivated than the control group and they might have interacted more among themselves to create a cooperative product. For all these reasons screencast producing group might have been more successful.

Screencasting should be used in a way that it would involve the students directly, place more responsibility on to students, and teach sharing to them. The most effective way for this is teaching them how to create their own screencasts and asking them to prepare the screencasts themselves for

the learning tasks. If this described method is not used students still can learn but it wouldn't be as effective as in the learning situation that students participate, take responsibility and enjoy learning. Further research about this method could be about how different learning approaches could be used to design screencasts and the effectiveness of these designs.

References:

Brown-Sica, M, Sobel, K, and Pan, D. Learning for All: Teaching Students, Faculty, and Staff with Screencasting *Public Services Quarterly* 5 (2) (2009): 81–97.

Buyukozturk, S. (2011) Experimental Design: Pretest-Posttest with Control Group and SPSS practicing data analyses. Ankara. Pegem.

Creswell, J.W. (2013). Qualitative inquiry and research design: Choosing among five approaches, 3rd ed. Thousand Oaks, CA: Sage.

Galligan, L. and Hobohm, C. (2013) Students using digital technologies to produce screencasts that support learning in mathematics. In: 36th Annual Conference of the Mathematics Education Research Group of Australasia (MERGA36): Mathematics Education: Yesterday, Today and Tomorrow ,7-11 Jul 2013, Melbourne, Australia.

Clark, R. C. and Mayer, R. E (2008) E- learning and the Science of Instruction. Third Edition. Pfeiffer Awiley İmprint. SanFrancisco.

Glesne, C. (2010). Becoming qualitative researchers: An introduction, 4th ed. Boston: Pearson.Grabe, M. and Christopherson, K. "Optional student use of online lecture resources: resource preferences, performance and lecture attendance." Journal of Computer Assisted Learning 24 (2008): 1–10.

Hove, Christina M. and Kevin J. Corcoran, "If You Post It, Will They Come? Lecture Availability in Introductory Psychology" Teaching of Psychology 35(2) (2008): 91– 95.

Jones, S.R., Torres, V., and Arminio, J. (2006). Negotiating the complexities of qualitative research in higher education: Fundamental elements and issues. New York: Routledge.

Jordan, C., Loch, B., Lowe, T., and others (2011) Do short screencasts improve student learning of mathematics? *MSOR Connections Vol 12 No 1 Winter 2011/Spring 2012*

Lang, G, Ceccucci W. (2013) Clone Yourself: Using Screencasts in the Classroom to Work with Students One-on-One 2013 *Proceedings of the Information Systems Educators Conference. San Antonio, Texas, USA.*

Lloyd, S. A., & Robertson, C. L. (2012). Screencast tutorials enhance student learning of statistics. *Teaching of Psychology, 39*(1), 67-71.

McGarr, O. (2009) A Review of Podcasting in Higher Education: Its Infuence on the Traditional Lecture, *AustralasianJournal of Educational Technology* 25(3): 30– 321.

Mullamphy, D., Higgins, P., Belward, S., & Ward, L. (2010). To screencast or not to screencast. *ANZIAM Journal North America, 51*, C446-C460.

Paul, B. (2009) Assessing Homegrown Library Collections: Using Google Analytics to Track Use of Screencasts and Flash-Based Learning Objects *Journal of Electronic Resources Librarianship* 21 (1) (2009):75–92.

Pinder-Grover, T., Green, K. R. & Millunchick, J.M. (2011). The efficacy of screencasts to address the diverse academic needs of students in a large lecture course. *Advances in Engineering Education*, Winter 2011, 1-28.

Pinder-Grover, T. , Millunchick, J. M., Bierwert, C. C, (2008) Work in progress: Using screecasts to enhance student learning in a large lecture Materials Science and Engineering course," Paper presented at the 38th IEEE/ASEE Frontiers in Education Conference, Saratoga Springs, New York, October 22–25, 2008. http://fe-conference.org/fe2008/ papers/1362.pdf

Pinder-Grover, T,. Millunchick, J. M, Bierwert, C, and Shuller L. (2009) Leveraging Screencasts to Strategically Clarify Unclear Materials Science Concepts," Paper presented at the American Society of Engineering Education Annual Conference and Exposition, Austin, Tx, June 14–17, 2009. http://soa.asee.org/paper/conference/ paper-view.cfm?id=11336

Rose, K. K. (2009) Student Perceptions of the Use of Instructor-Made Videos in Online and Face-to Face Classes," *MERLOT Journal of Online Learning and Teaching* 5(3) (2009)http://jolt.merlot.org /vol5no3/rose0909.htm (accessed October7, 2012)

Tekinarslan, E. (2013) Effects of screencasting on the Turkish undergraduate students'achievement and knowledge acquisitions in spreadsheet applications Journal of Information Technology Education: Research, 12, 271- 282. Retrieved from http://www.jite.org/documents/Vol12/JITEv12ResearchP271282Tekinarslan 1250.pdf

Winterbottom, S. (2007). Virtual lecturing: Delivering lectures using screencasting and podcasting technology. Planet, 18, Available: http://www.gees.ac.uk/planet/ p18/sw.pdf